L 7938-66

ACC NR: AP5023653

parameters are claimed to have been measured:

	First model	Second model	
Nominal d-c voltage	9.999	10.2375	v
Resolution	1	2.5	mv
Signal-source resistance	2000±50	2500±100	ohms
Conversion time	3	0.15	msec
Permissible temperature	+15+35	20±5	C
Supply-voltage variation	±10	±10	%
Absolute conversion error	±(0.02% U_x + 1)	±(0.05% U_x + 2.5)	mv

Orig. art. has: 3 figures.

SUB CODE: 09 / SUBM DATE: 00 / ORIG REF: 002

Card 2/2

SAMORUKOVA, G.T., inzh.; MOZHILOVA, L.V., tekhnik

Single-cut tie-tamping machinery. Put' i put.khoz. 4 no.9:48 S '60. (MIRA 13:9)

(Railroads—Equipment and supplies)

L 00016-66 EWT(m)/EWA(m)-2 IJP(c)

ACCESSION NR: AP5021368 UR/0120/65/000/004/0219/0221
621.384.633

AUTHOR: Krasnov, N. N.; Moshin, A. N.; Ognev, A. A.; Ponomarev, A. A.

TITLE: Vertical displacements of the cyclotron beam due to the noncoincidence of the magnetic and electric planes

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 219-221

TOPIC TAGS: cyclotron, cyclotron frequency, cyclotron magnet

ABSTRACT: During the tuning of the 1.5-m FEI cyclotron the authors observed a vertical displacement of the cyclotron beam due to the noncoincidence of the magnetic and electric planes (the magnetic plane is represented by the surface with $H_R = 0$). The theoretical discussion presented in this paper shows that a small displacement of the mean magnetic plane relative to the electrical plane leads to a substantial vertical displacement of the beam which takes place at radii at which the particle crosses the accelerating gap at negative phase values of the voltage across the Ds. A comparison of the calculations with the experimental results shows that it is difficult at small radii to link the particle loss with plane noncoincidences since at those places the drop in the magnetic field is not very large and, consequently, it is hard to determine the position of the magnetic

Card 1/2

L 00016-66

ACCESSION NR: AP5021368

2

plane. Elsewhere (R = 35 cm) the planes are brought into agreement by asymmetric external shimming and this results in a current increase at the final 1.5 m radius up to 3.0 mA within an individual pulse. Orig. art. has: 8 formulas and 2 figures.

ASSOCIATION: Fiziko-energeticheskiy institut GKAE, Obninsk (Physics-Power Institute, GKAE)

SUBMITTED: 19Jun64 04 ENCL: 00 SUB CODE: NP

NO REF SOV: 001 OTHER: 000

Card 2/2

MOZHIN, N.V., inzhener.

TUM-51 installation for transferring milled peat from narrow-gage to wide-gage cars. Torf.prom.33 no.6:36-37 '56. (MLRA 9:10)

1.Poleyskaye torfopredpriyatiye.
(Peat--Transportation)

MOZHIN, V P

BUDNIK, G.I., kand.ekon.nauk; AVDAKOV, Yu.K., dotsent, kand.ekon.nauk; SARYCHEV, V.G., kand.ekon.nauk; PREOBRAZHENSKIY, A.A., kand. istor.nauk; AVDAKOV, Yu.K., dotsent, kand.ekon.nauk; POLYANSKIY, F.Ye., prof., doktor istor.nauk; ZUTIS, Ya.Ya. [Zutis, J.]; GULANYAN, Kh.G., prof., doktor ekon.nauk; GULANYAN, Kh.G., prof., doktor ekon.nauk; KONYAYEV, A.I., dotsent, kand.ekon.nauk; KHROMOV, P.A., prof., doktor ekon.nauk; SHALASHILIN, I.Ye., dotsent, kand.ekon.nauk; SHEMYAKIN, I.N., dotsent, kand.ekon.nauk; POGREBINSKIY, A.P., prof., doktor ekon.nauk; ORLOV, B.P., dotsent, kand. ekon.nauk; TYUSHEV, V.A., kand.ekon.nauk; BALASHOVA, A.V., kand. ekon.nauk; MOZHIN, V.P., kand.ekon.nauk; MINDAROV, A.T., dotsent, kand.ekon.nauk; SHIGALIN, G.I., prof., doktor ekon.nauk; GOLUBNICHIY, I.S., prof., doktor ekon.nauk; VOSKRESENSKAYA, T., red.; BAKOVETSKIY, O., mladshiy red.; MOSKVINA, R., tekhn.red.

[History of the national economy of the U.S.S.R.; lecture course] Istoriia narodnogo khoziaistva SSSR; kurs lektsii. Moskva, Izd-vo sotsial'no-ekon.lit-ry, 1960. 662 p. (MIRA 13:5)

1. Deystvitel'nyy chlen AN Latviyskoy SSR (for Zutis).
(Russia--Economic conditions)

USATOV, I.A., kand. ekon. nauk; GUBIN, B.V., kand. ekon. nauk; SMIRNOV, A.D., dots.; LAPTEV, Ye.N.; MOZHIN, V.P., kand.ekon.nauk; GUMEROV, R.M.; KORYUNOV, S.N.; PSHENICHNYY, P.P.; MYAKOV, N.M.; FILATOV, N.L.; FILIPPOVA, E., red. izd-va; LEBEDEV, A., tekhn. red.

[Economics and finance of socialist enterprises]Ekonomika i finansy sotsialisticheskikh predpriiatii. Moskva, Gosfinizdat, 1962. 404 p. (MIRA 15:9)
(Industrial management) (Finance)

NEDELIN, S.I.; GUMEROV, R.M.; KORYUNOV, S.N.; MOZHIN, V.P.; KOSYACHENKO, G.P., prof., red.; KONDRAT'YEVA, A., red.izd-va; LEBEDEV, A., tekhn. red.

[Collective farm monetary income and differential land rent] Denezhnye dokhody kolkhozov i differentsial'naia renta. Moskva, Gosfinizdat, 1963. 222 p. (MIRA 16:3)
1. Moscow. Nauchno-issledovatel'skiy finansovyy institut.
2. Otdeleniye finansov sel'skogo khozyaystva Nauchno-issledovatel'skogo finansovogo instituta (for Nedelin, Gumerov, Koryunov, Mozhin).
(Collective farms—Finance)
(Rent(Economic theory))

MOZHINA, M.

Several problems of wage organization in construction. Vop. ekon. no.8:149-152 Ag '60. (MIRA 13:7)
(Moscow--Construction industry)
(Wages)

MOZHINA, M.

Changes in the distribution of industrial workers according to the wage level in the U.S.S.R. Biul. nauch. inform.: trud i zar. plata 4 no.10:18-25 '61. (MIRA 14:10)
(Wages)

MOZHNYY, Ye.

Issuing credit to finance the mechanization of grain procurement stations. Den.i kred. 17 no.5:52-53 My '59.
(MIRA 12:10)

(Altai Territory--Grain-storage) (Credit)

31925
S/102/61/000/006/002/004
D299/D305

16.8000 (1103, 1329, 1132)

AUTHORS: Krynets'kyy, I. I., Mozhova, E. A. and Zhalnina, D. F. (Kiyev)

TITLE: Investigating nonlinear astatic self-adaptive systems

PERIODICAL: Avtomatyka, no. 6, 1961, 15-25

TEXT: Stability and performance of nonlinear astatic self-adaptive systems are considered; two different approximate calculation methods are discussed. The accuracy of the approximate computations is estimated by means of exact mathematical methods and by the electronic simulators МН-7 (MN-7) and ИПТ-5 (IPT-5). The control process is described by the equation

$$TV\dddot{x} + (T + V)\ddot{x} + \dot{x} + CF(x) = 0 \qquad (2)$$

where T is the time constant of the plant, C - the gain, V - the time constant of the controller, F(x) - the nonlinear characteris-

Card 1/7

Investigating nonlinear astatic ...

tic of the servomotor, x - the input variable. By means of a describing function, the nonlinear function F is linearized:

$$F(x) = h(A)x \tag{3}$$

where

$$h(A) = \frac{1}{\pi A}\int_0^2 F(A \sin\omega t)\sin\omega t \, d\omega t = \frac{4s}{\pi A^2}\sqrt{A^2 - \eta^2} \tag{4}$$

hence the nonlinear Eq. (2) reduces to the linear equation with one variable coefficient

$$TV\dddot{x} + (T + V)\ddot{x} + \dot{x} + ch(A)x = 0 \tag{5}$$

Card 2/7

Investigating nonlinear astatic ...

By the first approximate method, the solution of the nonlinear equation is sought in the same form as the solution of a second-order differential equation, provided the smallest root of the characteristic equation

$$TVp^3 + (T + V)p^2 + p + Ch(A) = 0 \qquad (8)$$

greatly differs from the other roots. Substituting $p = u + i\omega$, one obtains

$$x = TVu^3 - 3TVu\omega^2 + (T + V)u^2 - (T + V)\omega^2 + u + Ch(A) = 0 \qquad (9)$$

and

$$Y = 3TVu^3\omega - TV\omega^3 + 2(T + V)u\omega + \omega = 0 \qquad (10)$$

From Eq. (10) one finds ω^2 and substitutes it in Eq. (9), whose right-hand side becomes

Investigating nonlinear astatic ...

$$8TVu^3 + 8(T + V)u^2 + 2u\left[1 + \frac{(T + V)^2}{TV}\right] +$$

$$+ \frac{T + V}{TV} = Ch(A) = \frac{Ch(A)h_{cr}h^*}{h_{cr}h^*} = \frac{Ch(A)h^*}{h_{cr}H^*} \qquad (11)$$

where H^* is a dimensionless parameter:

$$H^* = \frac{h^*}{h_{cr}} \qquad (12)$$

h^* being the tangens of the inclination of the linearized characteristic, $h_{cr} = 2S/\pi\eta$ - the maximum value of h, determined from the

Card 4/7

Investigating nonlinear astatic ...

parameters of the nonlinear characteristic (without the higher harmonics). Eq. (12) is the basic working formula. The dependence of performance on H^* is determined by means of a generalized performance diagram (shown in a figure). In constructing the diagram, 3 cases are considered (different values for u and ω). Thus in the first case:

$$u = 0, \quad \omega = \omega_0 = \frac{1}{\sqrt{TV}}, \quad h = h^* = \frac{T + V}{CTV}$$

one obtains

$$H^* = \frac{2h\sqrt{A^2 - \eta^2}}{A^2} \tag{13}$$

$$A^2 = \frac{M}{2} \pm \sqrt{\frac{M^2}{4} - M\eta^2} \tag{14}$$

Card 5/7

Investigating nonlinear astatic ...

where

$$M = \left(\frac{4S}{\nu h^2}\right)^2$$

The obtained working formulas, in conjunction with the diagrams, permit determining the limits of stability and of the transient processes. A comparison of the working formulas with the curve based on the exact formulas shows that the working formulas can be used in practice, provided the system has filter property and the minimum root greatly differs from the other roots. If this is not the case, i.e. the roots are multiple or commensurate, they have to be taken into account. The construction of the transient processes, taking into account the 3 roots of the characteristic equation, is shown in diagrams. A numerical example illustrates the use of the first method. On the second approximate method, the solution to Eq.(5) is taken in the form: $x=x_1+x_2+x_3 = C_1 l^{p_1 t} +$

Card 6/7

Investigating nonlinear astatic ...

$+ C_2 1^{p_2 t} + C_3 1^{p_3 t}$. Stability and performance are studied on an equivalent system, by linearizing the nonlinear characteristic F. Thereupon, the usual criteria (Hurwitz's, etc.) for linear systems are used. A numerical example is given. The 2 approximate methods can be applied provided: a) the system has filter property and the minimum root is incommensurable with the others, or b) only one condition holds - that of the filter. An estimate of the accuracy of the methods, carried out by exact mathematical investigations as well as by experimental studies, proved their practical feasibility. A third method, based on rough working formulas, involves determining the stability limits by describing function analysis, and the limits of the monotonous transient processes by exact methods. There are 5 figures and 8 Soviet-bloc references.

SUBMITTED: July 3, 1959

Card 7/7

MOZHUL', V. G.

Pamiatka motoristu elektropily po tekhnike bezopasnosti. Moskva, Goslesbumizdat, 1950. 11 p. illus.

Memorandum on accident prevention for electric saw operators.

LLC: TS851.M74

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

MOZHUL', V. I., PERFILOV, M. A.

Lumbering

Results of using skidding machinery at the Luzhskiy logging camp. Les. prom. 12 no. 7, 1952.

2

9. Monthly List of Russian Accessions, Library of Congress, September 1953, Uncl.

[illegible]UL', V.

Okhrana truda na lesozagotovkakh i lesosplave [Protection of labor in logging and log floating]. 2-e izd., Profizdat, 1953. 138 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 11 February 1954

MOZHUL', V.G.; LARIN, V.T., red.; GORYUNOVA, L.K., red. izd-va; KOLESNIKOVA, A.P., tekhn. red.

[Safety measures in operating electrical equipment in lumbering]Elektrobezopasnost' na lesozagotovkakh. na lesozagotkakh. Moskva, Goslesbumizdat, 1956. 64 p. (MIRA 15:9)

1. Russia (1923- U.S.S.R.)Ministerstvo lesnoy promyshlennosti. TSentral'noye byuro tekhnicheskoy informatsii.
(Lumbering—Electric equipment)
(Lumbering—Safety measures)

MOZHUL', Vladimir Georgiyevich; MYAGKOV, V.A., redaktor; SARMATSKAYA, G.I., redaktor izdatel'stva; SHITS, V.P., tekhnicheskiy redaktor.

[Safety engineering and fire prevention in lumbering] Tekhnika bezopasnosti i protivopozharnaia tekhnika na lesozagotovkakh. Moskva, Goslesbumizdat, 1956. 209 p. (MLRA 10:4)
(Lumbering--Safety methods) (Fire prevention)

MOZHUL, V. G.

Bezpieczenstwo pracy i ochrona przeciwpozarowa przy pozyskiwaniu drewna. (Wyd. 1.) Warszawa, Panstwowe Wydawn. Rolnicze i Lesne, 1956. 255 s.
(Labor safety and protection against fire in lumbering. 1st ed.)
D, Not in DLC

SO: Monthly List of East European Accessions (EEAI) LC, Vol. 6, no. 8, Aug 1957. Uncl.

MOZHUL', Vladimir Georgiyevich; FEDOROV, N.S., red.; PROTANSKAYA, I.V., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Safety measures and fire extinction in lumbering camps] Tekhnika bezopasnosti i protivopozharnaia tekhnika na lesozagotovkakh. 1961. 261 p. (MIRA 15:2)
(Forest fires) (Lumbering—Safety measures)

MOZHUL', Vladimir Georgiyevich; BRONINA, Alina Borisovna; NIKITIN, L.I., red.; MYAKUSHKO, V.P., red. izd-va; SHIBKOVA, R.Ye., tekhn. red.

[Labor protection in lumbering camps and timber rafting]Okhrana truda na lesozagotovkakh i lesosplave. 3. izd., perer. Moskva, Goslesbumizdat, 1962. 124 p. (MIRA 16:2)
(Lumbering--Safety measures)

MOZHZHERIN, V.M.

Simple sighting device for the AT-1 telescopes. Biul.sta.opt. nabl.isk.sput.Zem. no.1:7-8 '60. (MIRA 13:5)

1. Krymskaya stantsiya nablyudeniya iskusstvennykh sputnikov Zemli.
(Telescope, Reflecting)

NEVEL'SKIY, A.V., mladshiy nauchnyy sotrudnik; BRATIYCHUK, M.V.; SAVRUKHIN, A.P.; MOZHZHERIN, V.M.; LATYPOV, A.A.; CHUPRINA, R.I., mladshiy nauchnyy sotrudnik

Results of photographic observations of artificial earth satellites. Biul.sta.opt.nabl.isk.sput.Zem. no.8:17-24 '59. (MIRA 13:6)

1. Astrosovet AN SSSR (for Nevel'skiy). 2. Nachal'nik stantsii opticheskikh nablyudeniy Uzhgorodskogo gosuniversiteta (for Bratiychuk). 3. Nachal'nik stantsii fotonablyudeniy iskusstvennykh sputnikov Zemli pri Instantsii nablyudeniya sputnikov Krymskoy astrofizicheskoy observatorii (for Mozhzherin). 5. Nachal'nik fotograficheskoy stantsii Tashkentskoy astronomicheskoy observatorii AN UzSSR (for Latypov). 6. Astrosovet AN SSSR (for Chuprina).

(Artificial satellites--Tracking)

L 21739-65 FSF(h)/FSS-2/EWT(l)/FS(v)-3/EEC(k)-2/EWA(d)/T/EED(b)-3 Pi-4/Pae-2/
Pb-4 IJP(c)/SSD/AFWL/ASD(a)-5/SSD(c)/BSD/AFMDC/AFETR/AFTC(a)/RAEM(1)/ESD(dp)/
ACCESSION NR: AT5003598 ESD(gs)/ESD(t) GW S/2816/63/000/033/0033/0034

AUTHOR: Mozhzherin, V. M. (Chief of artificial Earth satellite tracking station)

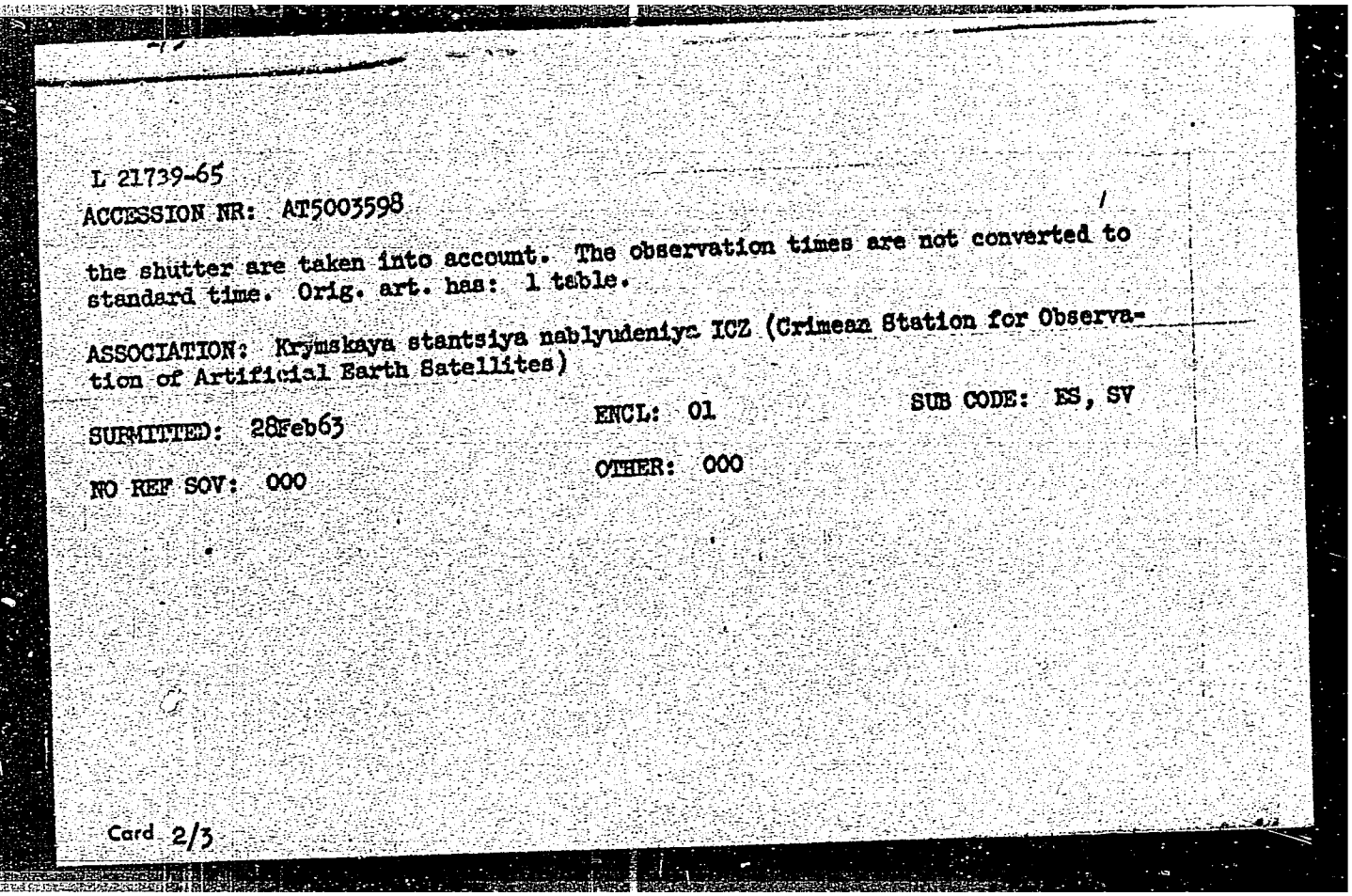
TITLE: Crimean station for observation of artificial earth satellites

SOURCE: AN SSSR. Astronomicheskiy sovet. Byulleten' stantsiy opticheskogo nablyudeniya iskusstvennykh sputnikov Zemli, no. 33, 1963, 33-34

TOPIC TAGS: artificial earth satellite, photographic equipment, satellite photography

ABSTRACT: The observations were made with a Zenith-C camera, using an Uran-9 lens, mounted on equatorial equipment and 35 mm film for aerial photography. The measurement of negatives was made with a UIM-21 microscope. The coordinates were calculated on the basis of two interpolations, using three reference stars (A.A. Kiselev method). From a comparison of the calculation results obtained with the aid of various groups of reference stars the mean square errors of the coordinates were found. For negatives 1-3 the times of observation were determined by relating a cronograph to radio signals of the σ-points, and for negatives 4-7 by relating it to RYeS signals. The retardation in the receiver-adapter system and the delay of

Card 1/3



L 21739-65

ACCESSION NR: AT5003598

the shutter are taken into account. The observation times are not converted to standard time. Orig. art. has: 1 table.

ASSOCIATION: Krymskaya stantsiya nablyudeniya ICZ (Crimean Station for Observation of Artificial Earth Satellites)

SUBMITTED: 28Feb63 ENCL: 01 SUB CODE: ES, SV

NO REF SOV: 000 OTHER: 000

Card 2/3

L 21739-65

ACCESSION NR: AT5003598

ENCLOSURE: 01

Crimean Station for Observation of Artificial Earth Satellites

№ п/п	DATA	U.T.	α (1950.0)	δ (1950.0)
1	2	3	4	5
		1960 I		
	1961 г.			
1.	January 15	$03^h19^m51^s.775$	$9^h36^m31^s.47 \pm 0^s.02$	$19^\circ36'29''.4 \pm 1''.3$
2.	January 15	$03^h22^m27^s.485$	$11^h03^m27^s.32 \pm 0^s.16$	$37^\circ54'13''.3 \pm 0''.8$
3.	15	03 25 28.581	15 19 47.10 ± 0.07	51 26 45.9 ± 1.0
4.	October 28	02 08 39.917	5 10 26.98 ± 0.01	-12 01 36.5 ± 0.3
5.	28	02 10 05.785	5 42 19.18 ± 0.13	-17 44 06.3 ± 0.4
6.	28	02 11 18.560	6 07 49.31 ± 0.14	-22 15 36.6 ± 0.5
	28	02 13 42.015	6 54 09.18 ± 0.16	-30 08 15.6 ± 0.3

Card 3/3

L 64123-65 EEO-2/EED-2/EEC(k)-2/EWT(d)/EWT(1)/EBD/FS(v)-3/T-2/EWA(d)/EEC(s)-2/
ACCESSION NR: AP5021256 FSS-2 GW/WR UR/0293/65/003/004/0630/0635
621.397.13:629.19

AUTHOR: Agapov, Ye. S.; Anisimov, V. F.; Mozhzherin, V. M.; Nikonov, V. B.; Prokof'yeva, V. V.; Pergament, V. I.; Sinenok, S. M.

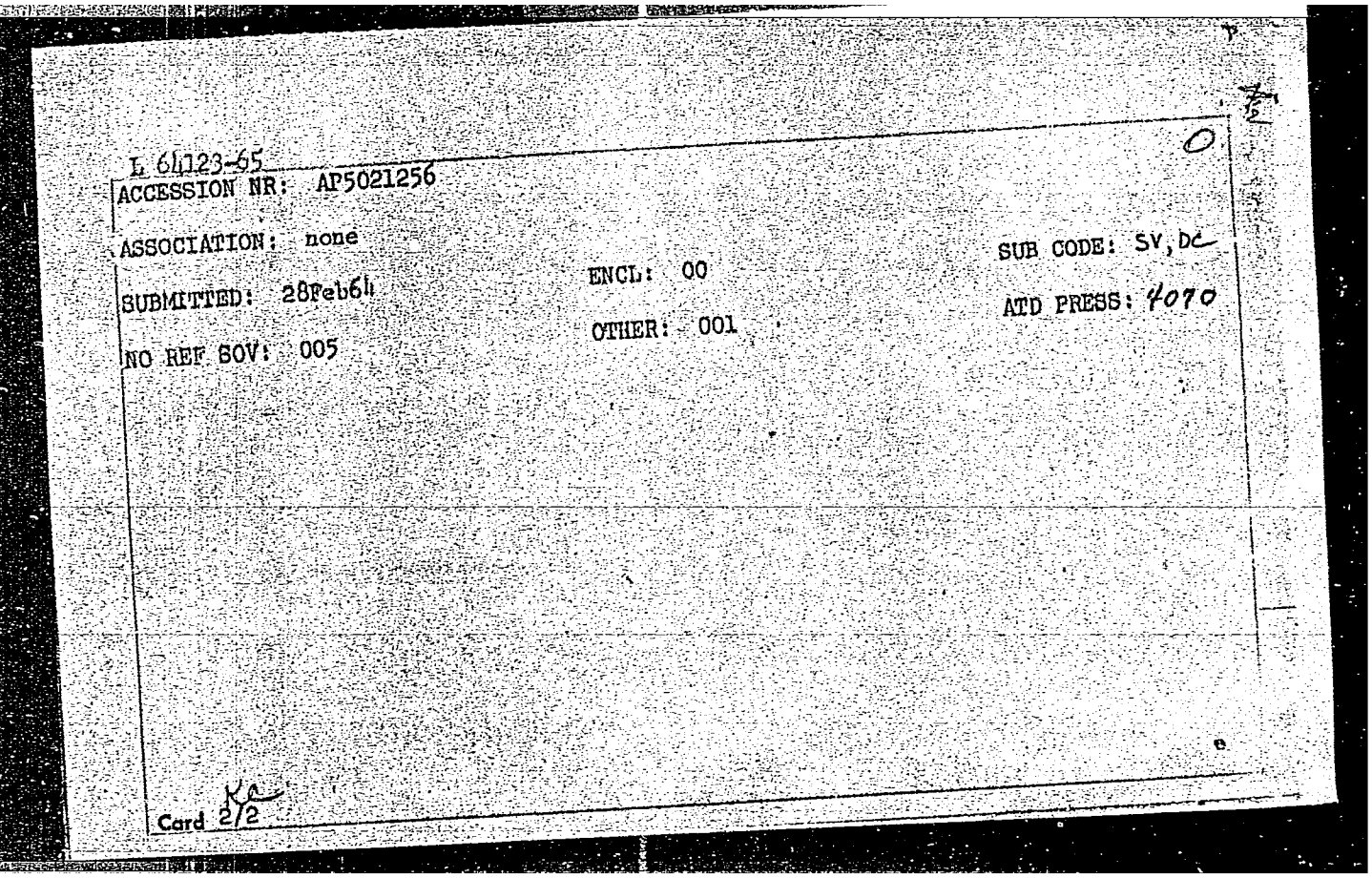
TITLE: Observations of artificial earth satellites by television

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 630-635

TOPIC TAGS: satellite observation, earth satellite, television observation, optical satellite observation, Gelios 53 lens

ABSTRACT: The results are given of observations of artificial earth satellites made with a highly sensitive television system employing a Gelios-53 lens (D = 80 mm, F = 200 mm) and mounted on an APSh-30 parallactic stand. The observations were made in accordance with computed ephemerides. All predicted satellite passages were detected visually and recorded photographically. These visual observations proved that the television system was capable of detecting and tracking satellites having a stellar magnitude of 8—9 with relative ease. Notwithstanding the short focal length, the satellite's position on the negative could be determined with an acceptable degree of accuracy. Orig. art. has: 8 figures. [DM]

Card 1/2



L 64123-65
ACCESSION NR: AP5021256

ASSOCIATION: none

SUBMITTED: 28Feb64 ENCL: 00 SUB CODE: SV, DC

NO REF SOV: 005 OTHER: 001 ATD PRESS: 4070

Card 2/2

L 22702-66 EWT(1)/T . IJP(c) JXT(CWW)/GW

ACC NR: AP6010439 SOURCE CODE: UR/0386/66/003/005/0219/0223

AUTHOR: Kokurin, Yu. L.; Kurbasov, V. V.; Lobanov, V. F.; Moshzherin, V. M.; Sukhanovskiy, A. N.; Cheraykh, N. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

47
B

TITLE: Measuring the distance to the moon by an optical method

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 5, 1966, 219-223

TOPIC TAGS: moon, moon earth distance, distance measurement, moon location, optical location, laser application

ABSTRACT: A description is given of the experimental measurement of the distance to the moon by means of an optical locator. A schematic of the locator is shown in Fig. 1. Ruby laser 1 and photomultiplier 2 are fixed rigidly in the Kude focus of telescope 3. A tunable interference filter 4 is placed in front of the photomultiplier and behind diaphragm 5. Mirror 6 can be automatically switched from receiving to transmitting operations. Photomultiplier output amplifier and pulse shaper 7 follow 2, and the measurement of the time intervals between the emission and reflection (from the moon) of laser pulses is made by

Card 1/4

L 22702-66

ACC NR: AP6010439

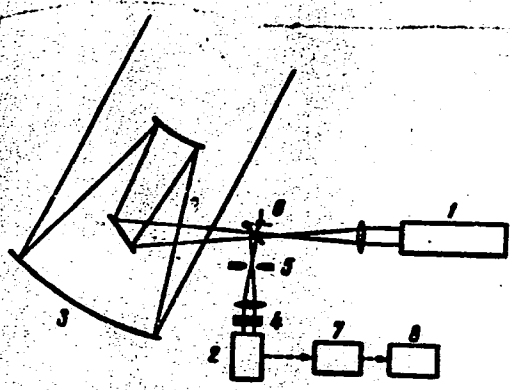


Fig. 1. Schematic of the locator

counter 8, which is activated by that portion of the laser pulse directed to the photomultiplier. The laser operated at 6943 Å, with a pulse energy and duration of 5—7 j and $5 \cdot 10^{-8}$ sec, respectively. The diameter of the main telescope mirror was 2.6 m and its focal length 104 m; the beam diameter was 13 mm, and the divergence of the beam reflected from the telescope mirror was ≥3 sec of arc. The filter pass-band was 10 Å, and the instrumental error in the measurement of time $\pm 10^{-7}$ sec. The observation of the lunar surface was confined to an area located at the bottom of the Flammarion crater with the selenographic

Card 2/4

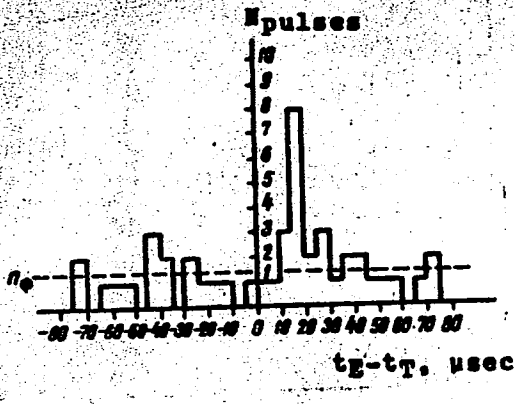


Fig. 2. Results of measurements

coordinates of λ—3°.57 and ϕ—2°.98. The results of observations are shown in Fig. 2. as a frequency distribution of the quantity t_g-t_T in 10-μsec class intervals (t_g and t_T are the experimental and calculated times, respectively, required by a signal to complete the round trip). The signal-to-noise ratio was ~5 and the mean of the useful signal was found to be distributed within the 15—20 μsec class boundary, with a standard deviation of 1.2 x 10^{-6} sec. The total error in positioning the distribution center was ±1.3 x 10^{-6} sec, which corre-

L 22702-65

ACC NR: AP6010439

sponds to 2200 m error in the measurement of distance. Orig. art. has: 2 figures. [YK]

SUB CODE: 20/ SUBM DATE: 22Jan66/ ORIG REF: 002/ OTH REF: 001

ATD PRESS: 4229

Card 1/1 BK

ACC NR: AP6019595 SOURCE CODE: UR/0293/66/004/003/0414/0426

AUTHOR: Kokurin, Yu. L.; Kurbasov, V. V.; Lobanov, V. F.; Mozhzherin, V. M.; Sukhanovskiy, A. N.; Chernykh, N. S.
ORG: none

TITLE: On the feasibility of measuring lunar disk and orbital parameters by optical radar

SOURCE: Kosmicheskiye issledovaniye, v. 4, no. 3, 1966, 414-426
TOPIC TAGS: lunar albedo, moon, laser application

ABSTRACT:

Yu. L. Kokurin and coworkers [1] have reviewed the theoretical problems in laser ranging of the moon, with the object of determining more accurate values for several Earth-Moon parameters. The authors discuss methods for 1) obtaining a more detectible reflection signal and 2) using the measured range to compute such parameters as mean lunar orbital radius, lunar disk radius, parallax constant, and Earth equatorial radius.

The basic range equation for a reflected electromagnetic signal is taken as a starting point. The factors are the same as in the radar range equation, except that the return signal varies inversely as the square, rather than as the fourth power, of range, since it is assumed that all the generated laser flux is incident on the Moon. Using an average figure for atmospheric absorption, a lunar albedo of 0.1, and an effective telescope area of 5.3 m^2 (actual area of a telescope currently in use), the authors calculate

 UDC: 523.31.082.5 + 521.61.082.5

that the relationship between reflected and transmitted energy is

$$W_{refl} \approx 2 \times 10^{-19} \; W_{tr}.$$

It follows that with the highest sensitivity photodetectors now available, W_{tr} must be at least 150 joules in order to obtain from the Moon a consistently detectible reflection, i.e., one that does not require statistical analysis to be detected. The pulse must be as short as possible to maximize range resolution; however, present laser pulses of the energy level demanded would have durations of the order of milliseconds, which means a range uncertainty of several hundred kilometers. If Q-switching is used to shorten pulse time, there is an intolerable loss in power amplitude. The conclusion is that only when more powerful short-pulse lasers are developed can there be a significant refinement in lunar ranging measurements.

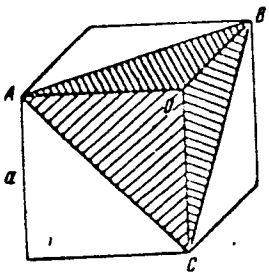
Factors which degrade the laser technique are also discussed. One of these is the unavoidable divergence of the beam in the atmosphere, estimated at 2" to 3", which would give a lunar spot of some 3.5—5 km across. Contour irregularities within the illuminated area can add to the range uncertainty in the return signal, in the form of range "smear." Owing to the Moon's curvature, a similar effect occurs which increases as a function of

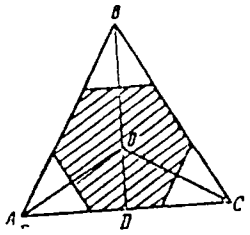
ACC NR: AP6019595

the distance of the target area from the center of the lunar disk. An obvious way to improve the technique would be to place some form of mirror on the Moon; the authors propose an optical corner reflector for this purpose (see Fig. 1) and have analyzed ways of optimizing its design. With the density of the reflector material assumed to be the limiting factor, it is shown that one large reflector is more effective than several small ones. For a glass corner reflector, the gain β in return signal over that from the lunar surface alone (assuming a ruby laser) is calculated to be $\beta = 2.15 \times 10^{-3} a^4$, where a is the length of a joint edge in cm (see Fig. 1). Assuming a glass density of 2.7 g/cc, the authors find values of gain ranging from $\beta = 25$ for $a = 10.4$ cm up to $\beta = 1330$ for $a = 28.2$ cm. Some loss in reflectivity must be anticipated, such as by dust contamination, so the foregoing figures are based on a reflection coefficient of only 0.5.

Fig. 1. Corner reflector (Hexagon indicates effective reflective area)

Card 3/5





Orientation of the reflector would be critical. If the plane of the aperture is not nearly normal to the laser beam, a severe loss in return signal results; for example, a 15° offset would mean a signal loss of approximately 30% (Initial acquisition of the reflector is not discussed). Constraints on reflector geometry are also quite severe, if diffraction losses are to be minimized. For a reflector with $a = 14$ cm, it is estimated that the angular tolerance between adjoining planes should be held within 0.1"; with such tight tolerances, temperature extremes and mechanical stresses could be

ACC NR: AP6019595

critical factors in reflector performance. Under reasonably good conditions, however, it is calculated that a reflector with $\beta = 40$ would return an adequate detectible signal to Earth from a Q-switched ruby laser of 4 to 5 joules output.

The possibility of confusing a genuine signal with noise or surface rather than reflector return can be minimized by using multiple detection and correlating the results. In fact, if three photomultipliers are used simultaneously, the experiment could be performed in daylight, with a low probability of error.

The authors conclude by giving the procedures for calculating mean lunar orbital radius (mean distance between Earth and Moon mass centers), radius of the lunar disk, Earth equatorial radius, and Earth-Moon parallax constant. All of these are obtainable from knowledge of an arbitrary line-of-sight distance from the Earth to the Moon, measured as described above. The calculations show that, with the improved ranging method, parameters such as the Moon's orbital radius and disk radius could be determined to accuracies of several hundreds of meters, a great improvement over the present accuracy of several kilometers. Unfortunately, these accuracy figures do not seem to be tied to any tolerance on the range measurement.

/FSB: v. 2, no. 9/ Orig. art. has: 33 formulas, 2 figures and 1 table.

Card 5/5 SUB CODE: 03,20 / SUBM DATE: 26May65 / ORIG REF: 009 / OTH REF: 003

KUVAYEV, N.N., kand.tekhn.nauk; MOZHZHERIN, V.M., inzh.

Conditions for the formation of funnels caused by the mining of ore deposits. Bezop.truda v prom. 7 no.3:23-24 Mr '63. (MIRA 16:3)

1. Krivorozhskiy opornyy punkt Vsesoyuznogo nauchno-issledovatel'skogo marksheyderskogo instituta. (Mining engineering)

Name: MOZHZHEVELOV, B. N.
Title: engineer

Works in the field of acoustics (loud speakers, microphones, public address systems, etc.) Author wrote an article on American acoustic equipment. Many U. S. types of loudspeakers, dynamic speakers, microphones, etc. are mentioned with which the author seems to have a good familiarity.

REF: R. F. #1, pg 39, col 2, 1937

MOZHZHEVELOV, B.N.

Perspektivy blizhaishikh let. /The outlook for future years/. (Radio, Nov. 1947, v.20, no. 11, p. 28). DLC: TK5540.R76

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

MOZ ZHE.ELOV, . . .

36103. K vopros ob ekon...ie ...sti pri...n ikov. (Po povod stat'i E. ... "Za ekonomichnost' massov... radio rie...ikov" ... rn. "Radio", 1..., No. ..),
Radio, 1949, No. 11, s. .1.

SO: Let... ... zhurnal'nykh ..., No. .9, 1949

MOZH ZHEVELOV B. N.

PA 44/49T101

USSR/Radio
Radiofication
Radio Receivers

May 49

"The Radio Industry and Radiofication of the Country," B. N. Mozhzhevelov, Board Mem, Min of Industries Manufacturing Communication Materials, 2 pp

"Radio" No 5

Number of broadcast receivers produced in 1948 was 2½ times greater than number produced in 1940. Very soon, Aleksandrovskiy radio factory will release two-band, three-tube receivers (ARZ-49) which will cost considerably less than

44/49T101

USSR/Radio (Contd)

May 49

the "Rekord-47." In last half of 1949, new receivers will be released by Novosibirsk, Sarapul, and imeni Kozitskiy factories.

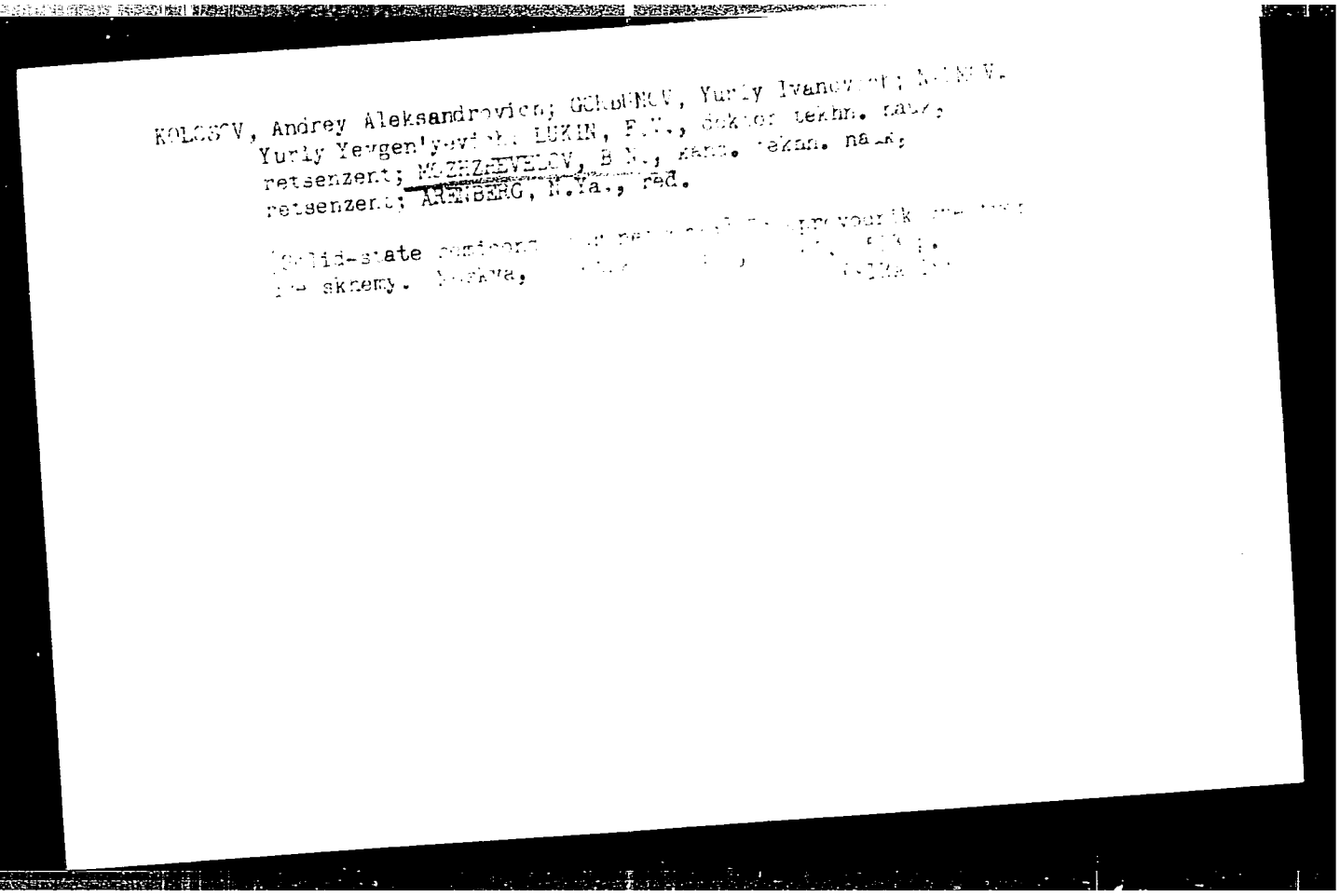
44/49T101

BORISOV, Viktor Gavrilovich; BERG, A.I.; DZHIGIT, I.S.; YELIN, O.G., KULIKOVSKIY, A.A.; MOZHZHEVELOV, B.N.; SMIRNOV, A.D.; TARASOV, F.I.; TRAMM, B.F.; CHECHIK, P.O.; SHAMSHUR, V.I.; MALININ, R.M. redaktor; VORONIN, K.P., tekhnicheskiy redaktor

[Young radio amateur] IUnyi radioliubitel'. Izd. 2-oe, ispr. i dop. Moskva, Gos.energ.izd-vo 1955. 271 p.(Massovaia radio-biblioteka, no.224) (MLRA 8:11)
(Radio--Amateurs' manuals)

FROLOV, Aleksey Dmitriyevich; MOZHZHEVELOV, B.N., retsenzent; VASIL'YEV, K.F., red.

[Radio equipment assembly; basic design principles] Uzly radioapparatury; obshchie osnovy konstruirovaniia. Moskva, Izd-vo "Energiia," 1964. 469 p. (MIRA 17:8)



KOLOSOV, Andrey Aleksandrovich; GOLOVKOV, Yuriy Ivanovich; [illegible]
Yuriy Yevgen'yevich; LUKIN, P.V., doktor tekhn. nauk,
retsenzent; MOZHAYEVELOV, B.N., kand. tekhn. nauk,
retsenzent; ARENBERG, N.Ya., red.

[illegible] solid-state [illegible]
[illegible] skhemy. Moskva, [illegible]

40756
S/120/62/000/004/033/047
E192/E382

24.6700

AUTHORS: Alekseyev, A.G., Gorelkin, A.S., Mozalevskiy, I.A., Mozin, I.V., Tarasov, B.I. and Trokhachev, G.V.

TITLE: The use of permalloy pick-ups for mass magnetic measurements on the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 179 - 184

TEXT: Measurement of the relative magnetic fields at injection fields of H = 90 Oe is effected by means of permalloy pick-ups with magnetizing coils (Giordano, S., Green, G.K. and Rogers, E.J. Rev. Scient. Instrum., 1953, 24, 848). The magnetizing coil is supplied with DC and is connected in such a way that the direction of the magnetic field H_K of the coil and that of the measured field are in opposition. When the magnetic field reaches the value H_K, a signal coil of the pick-up produces a voltage pulse. The field H_i at the point where the pick-up is situated is evaluated from the formula:

Card 1/4

The use of permalloy pick-ups...

$$H_i = H_{i0} + H_{it} \cdot \Delta T_i \ ,$$

where H_{i0} is the field due to the magnetizing coil,

H_{it} is the rate of rise of the field at the point i, and

ΔT_i is the time interval between the pulses obtained from the reference and the measuring pick-ups.

The quantity H_i can also be expressed as

$H_i = k_i \left[I_i + (\Delta I / \Delta t)_i \, \Delta T_i \right]$, where k is a constant which is determined from $H = kI$ and I is the current. The equipment for the measurement of the field in a block (unit) consists of 19 pick-ups which were situated along the arc of an equilibrium orbit at distances of 100 mm from each other. A pick-up has the form shown in Fig. 2 and consists of a permalloy strip 5 having transverse dimensions of 10 x 100 mm^2 and correcting rods 2 made of the same material; the pick-up also contains a magnetizing coil 3 and an induction winding 5 . For measuring the rate of rise of the magnetic field the magnetizing current of the

The use of permalloy pick-ups ...

pick-ups is varied by ± 10%, which corresponds to Δt_i = 600 μs. The actual measuring equipment was connected to the pick-ups by means of high-frequency cables. The magnetizing coils of the pick-ups were connected in series and supplied with a current of 150 mA, stabilized to within ± 0.02%. The current was measured by means of a potentiometer, the error of measurement being 0.02%. Since the width of the pulse produced by the pick-ups was much greater than that required for achieving the desired accuracy of the measurements, the pulses were suitably shaped by means of shaping circuits. The equipment had to work in a hall, where the perturbing electromagnetic fields were comparatively strong, the spectral maxima occurring at 50 c.p.s. and 20 - 30 kc/s. The low-frequency interference was eliminated by suitably choosing the intermediate stages of the forming circuits, whilst the high-frequency noise was suppressed by means of an RC filter. The equipment could measure time with an error of 4 μs and the current with an error of 0.02%, so that the maximum measurement error did not exceed 0.1%. There are 4 figures.

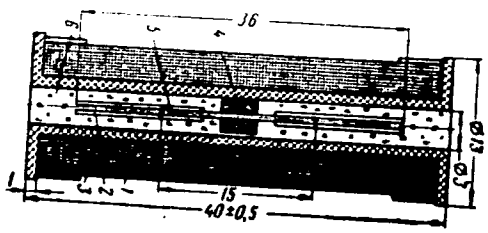
Card 3/4

The use of permalloy pick-ups ... S/120/62/000/004/033/047
E192/E382

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskiy apparatury GKAE (Scientific Research Institute of Electrophysical Equipment, GKAE)

SUBMITTED: April 10, 1962

Fig. 2:



Card 4/4

L 26662-65 EPA(w)-2/EWT(m)/EWA(m)-2 Pt-10/Pab-10 IJP(c)
ACCESSION NR: AT5002708 S/3092/64/000/002/0090/0103

AUTHORS: Alekseyev, A. G.; Mozin, I. V.; Smirnov, V. P.

TITLE: Method and apparatus for magnetic measurements in an electron synchrotron with hard focusing, in the field range 500--10,000 Oersted

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 2, 1964, 90-103

TOPIC TAGS: electron synchrotron, hard focusing, magnetic field, magnetic measurement

ABSTRACT: In view of the close tolerances that the magnetic field of a 6-BeV synchrotron with hard focusing must satisfy, apparatus and a test measurement procedure were developed to measure the magnetic field with the required accuracy. The measurements consist

Card 1/2

L 26662-65
ACCESSION NR: AT5002708

of determining the distortion in the distribution of the field and the gradient along the equilibrium orbit, measurement of the distortion and distribution of the gradient along the radius of the magnet, measurement of the relative gradient on the equilibrium orbit in the center of the electromagnet. The principle of the method developed consists of integrating the voltage from coils placed in the time-varying magnetic field. The theoretical premises underlying the different measurements are developed, after which the design of the measuring coils is described and the circuitry of the electronic integrator is described. A circuit for selecting the level of the measured field is described and the measurement accuracy discussed. Orig. art. has: 5 figures and 31 formulas.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: NP, EM

NR REF SOV: 000 OTHER: 003

Card 2/2

L 26658-65 EWT(d) Po-4/Pq-4/Pg-4/Pk-4/Pl-4 IJP(c) BC

ACCESSION NR: AT5002709 S/3092/64/000/002/0115/0119

AUTHORS: Alekseyev, A. G.; Gerbovetskiy, V. M.; Mozin, I. V.

TITLE: Stabilization of magnetic field, based on nuclear resonance

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 2, 1964, 115-119

TOPIC TAGS: magnetic field stabilization, nuclear magnetic resonance, automatic field control

ABSTRACT: The authors describe a system for automatically seeking the nuclear magnetic resonance (NMR) signal used to stabilize a magnetic field, and for capturing the signal in the stabilization mode over a wide range of random variations of the electromagnet current. The stabilization system is a feedback regulator which permits compensation of all the changes in the analyzer electromagnet field by

Card 1/3

L 26658-65

ACCESSION NR: AT5002709

varying the current in a supplementary coil. A block diagram of the setup is shown in Fig. 1 of the enclosure. The schematic diagram and the operating method are described. To obtain optimal NMR pickup signal, it was necessary to frequency-modulate the amplitude-modulated stabilized field. It is pointed out that frequency modulation of the high-frequency magnetizing field instead of the use of field modulation extends the scanning range of the system even more. Orig. art. has: 3 figures.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 01 SUB CODE: NP, EM

NR REF SOV: 002 OTHER: 001

Card 2/3

L 26658-65

ACCESSION NR: AT5002709

ENCLOSURE: 01

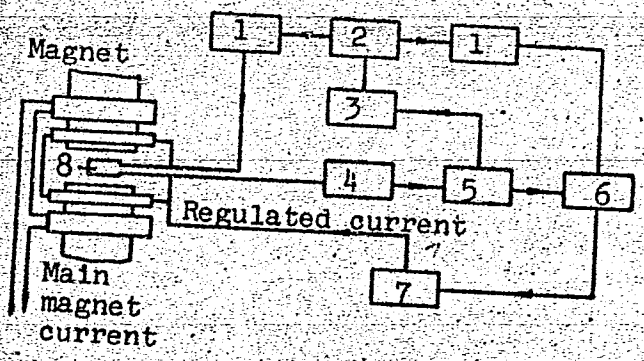


Fig. 1. Block diagram of set-up

1 - Accelerator, 2 - triangular wave generator, 3 - control stage, 4 - pick-up, 5 - shaping circuit, 6 - phase detector, 7 - controlled element, 8 - NMR signal pick-up

Card 3/3

40263
S/120/62/000/004/044/047
E192/E382

AUTHORS: Alekseyev, A.G., Vasil'yev, M.P. and Mozin, I.V.

TITLE: An instrument for measuring the rate of change of the magnetic field of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 236 - 239

TEXT: The instrument was designed for the 7 GeV proton synchrotron and it permits measurement of the reproducibility of the field-change rate and its absolute magnitude with an accuracy of 0.1%. The device is based on the potentiometric measurement of the e.m.f:

$$E = - kdB/dt$$

induced in the measuring coil. The measuring coils consists of a number of series-connected turns situated in the yokes of the electromagnets. The voltage U_K from the coil is applied to the input device 1 (see Fig. 1, which shows a block diagram of the instrument), where the signal is compared with the voltage of a reference element 2 . The comparison is performed

Card 1/3

during the whole time interval occupied by the induced pulse, the duration of the pulse being proportional to the rate of rise of the magnetic field. The switching device 4 selects the duration and instant of the measurement and transmits the difference signal through the amplifier 3 to the recorder 5 . The switching device is actuated by the cycle initiation pulse U_n .

The input circuit of the system consists of a filter, a reference-voltage source and a voltage divider. The switching device 4 receives the initiation pulse from a permalloy pick-up situated in the electromagnet. The pulse is amplified, then applied to a phantastron delay circuit. The trailing edge of the phantastron pulse determines the instant of commencing the measurement. The delay can be varied from 10 μs to 1.5 sec. The indicating device of the instrument is in the form of a simple vacuum-tube voltmeter. There are 4 figures.

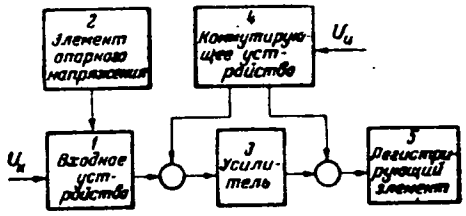
ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute of Electrophysical Equipment GKAE)

SUBMITTED: April 10, 1962

S/120/62/000/004/044/047
E192/E382

An instrument for ....

Fig. 1:



Card 3/3

MOZIN, I.V.

Voltage fluctuation control at the outlet of a cascade generator. Prib. i tekh. eksp. 8 no.2:164 Mr-Ap '63. (MIRA 16:4)
(Electric generators)

L 1440-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c)

ACCESSION NR: AT5015940 UR/3092/65/000/003/0106/0110

AUTHOR: Veselov, M. D.; Gerbovetskiy, V. M.; Mosin, I. V.

TITLE: Measuring the position of the magnetic median plane of the electromagnet in a 70-Bev accelerator

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 3, 1965, 106-110

TOPIC TAGS: particle accelerator, proton synchrotron, 70 Bev proton synchrotron

ABSTRACT: The median-plane position was determined by measuring a radial field component in a plane lying close to the geometrical median plane of the proton-synchrotron gap. Field measurements were made, with an error ±0.07 oe (which ensured a 0.8-mm mean-square allowance for the random spread of the median-plane position), in the working part of the cycle, at a 72-oe injection field.

Card 1/2

L 1440-66

ACCESSION NR: AT5015940

0

Field-rise time, 1.5 sec; field-shape repeatability error, 1—2%. A block diagram and a principal circuit diagram of the electronic instrument used in the measurements are given, as well as a sketch of a special adjustable holder for the permalloy field-strength sensor. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: NP, EC

NO REF SOV: 001 OTHER: 000

Card 2/2 DP

IN, A.

The individual is the cent[illegible] of attention. Gov.profsoiuzy 5 no.7:55-57 Jl '57. (MLRA 10:8)

1.Predsedatel' komiteta profsoyuza yaroslavskogo kombinata tekhnicheskikh tkaney "Krasnyy Perekop."
(Yaroslavl--Textile industry)
(Trade unions)

COUNTRY : Czechoslovakia
CATEGORY : Forestry. Dendrology. K

ABS. JOUR. : RZhBiol., No. 4 1959, No. 15706

AUTHOR : Mozina, Ivan
INST. : --
TITLE : [illegible] of the Hornbeam.

ORIG. PUB. : Zbor. kmet. in rozd., 1957, No.4, 3-39

ABSTRACT : It is noted that the hornbeam (Ostrya carpinifolia), which has exceptionally hard and heavy wood, is [illegible] species of temperate zone. Material data are presented on the study of the physical-technical properties of the hornbeam wood, and it is compared with beech wood derived from trees growing in forestry on the same territory. -- I.V. Nesmelov

Card: 1/1

MOZIS, V.

Calculation of horizontal reinforcement for reinforced-concrete elements loaded with eccentric stress and for prestressed-concrete elements. p.455.

INZENYRSKE STAVBY. Praha, Czechoslovakia. Vol. 3, no. 11, Nov. 1955.

Monthly list East European Accessions (EEAI) LC. Vol. 5, no. 2, Feb. 1956
Uncl.

MOZIS, V.

Design of three alternatives for a big bridge of prestressed concrete.

p. 509 (Inzenyrske Stavby) Vol. 5, no. 10, Oct. 1957, Praha, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 195[illegible]

MOZIS, Vilem, Inz., dr.

"Tables for designing reinforced concrete sections subject to bending stress" by [inz.] Frantisek Man. Reviewed by Vilem Mozis. Inz stavby 11 no.2:80 F '63.

MOZIS, Vilem, inz., dr.

Designing of complicated reinforced concrete sections.
Inz stavby 11 no.4:129-132 Ap '63.

MOLIS, Vilem, inz. dr.

Prestressed frame constructions with inclined stanchions. Inz stavby 12 no.5:220-224 My '64.

MOZISEK, M.

Distr: 4E2c(j)

Specific heat of Silon in the temperature range 10–90°. Max Mošíček and Ctirad Konecny. *Chem. průmysl* 6, 418–19(1956).—The sudden increase in sp. heat in the temp. range 20–80° was revealed by means of a diagram. This is probably attributable to structural changes within the plastic material Silon. From *C.Z.* 1956, 6697.

Henry M. Koehler

3
1-2a4g(Nb)
1

Distr: 4E2c(j)

Autoradiographic investigation of sulfur distribution in rubber mixtures. M. Mošiček and L. Klimánek (Research Inst. Rubber and Plastic Technol., Gottwaldov, Czech.). *Plaste u. Kautschuk* 10, 371–4(1958).—The distribution of S in a rubber mixt. as a function of the time of mixing on a mill is studied by an autoradiographic technique with S^{35}. Under the conditions used on a lab. mill, an essentially homogeneous distribution was attained in 2 or 3 min. Many facets of the technique are discussed in considerable detail including safety precautions, choice of materials, exposure time, and quant. evaluation of results. Hershel Markovitz

M. MOZISEK

15

Measurement of sulfur diffusion through tire tread rubber. M. Mošíšek (Výzk. ústav gumárenské a plastikářské technol., Gottwaldov, Czech.). *Plasts a. Kaučuku* 6, No. 2, 65-7(1969).—Samples of tire tread (3 cm. in diam., 1 mm. thick) contg. *Hevea* rubber with 45% C black were placed on a sheet of mica on which 50 mg. of S^{35} with 1 μc. of activity was deposited. The rubber sample was covered with a 10-μ mica sheet, and the diffusion of the S^{35} to the upper surface of the rubber samples was followed with a Geiger-Müller counter held at a distance of 0.5 cm. The diffusion coeff. D was evaluated from $\ln(I^t/I^0) = \text{const.} - (d^2/4Dt)$, where I is the radiation intensity at time t, and d the sample thickness. Between 25° and 90°, $D = 0.00069 \exp(-6400/RT)$ sq. cm?/sec. H. Morawetz

4
2 May
4E 2c (J)

JW
1/1

S/081/62/000/004/083/087
B101/B110

AUTHORS: Klimánek, Leo; Možíšek, Max

TITLE: Effect of ingredients on the absorption of β-radiation of the Tl^{204} isotope in rubber mixtures

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 615, abstract 4P402 (Kaučuk a plast. hmoty, no. 9, 1960, 321 - 323)

TEXT: To study the effect of ingredients on the absorption of Tl^{204} β-radiation the weakening of the electron flux was measured on its passage through a 1 mm thick film of rubber mixtures containing various amounts of different ingredients. The amount of absorption is directly related to the mean atomic number of the ingredients. The data obtained have to be considered in measurements of the thickness of rubber-impregnated cord and the determination of the homogeneity of rubber mixtures by the method of β-radiation absorption. [Abstracter's note: Complete translation.]

Card 1/1

23063
Z/008/61/000/006/002/003
E112/E135

2:6.00 2209

AUTHOR: Možíšek, Max

TITLE: Modification of polyethylene by ionizing radiation

PERIODICAL: Chemické listy, 1961, No.6, pp. 653-672 + 1 plate

TEXT: This paper reviews the knowledge in this field up to and including 1960, quoting 125 literature references. The following subjects are considered. 1) Sources of ionizing radiation. 2) Dosage of ionizing radiation and yields, the latter being expressed in terms of energy yield, G, which is the number of molecules produced from the macromolecule for each 100 eV of energy absorbed. 3) Dosimetry. Several dosimeters are listed ($FeSO_4$, alkyl halides, glass + Ce, discolouration of polymers, e.g. polymethylmethacrylate, which is coloured red-brown, celophane foil, polyvinylchloride foil, etc). 4) Effects of radiation on polymers are discussed in general terms. They may be cross-linked, or the main chains may be degraded. Which of the two processes will be the predominant feature can be predicted from the structure. A list is presented, dividing the polymers into two - cross-linking and degradation - groups. 5) Physico-chemical aspects of ionization

Card 1/ 4

Z/008/61/000/006/002/003
E112/E135

Modification of polyethylene by ionizing radiation

radiation. 6) Structure and properties of polyethylene are discussed and physical constants of both high- and low-pressure polyethylene are tabulated. 7) Theories about the action of ionizing radiation on the polyethylenes are summarised and the formation of free macromolecular radicals is postulated. Life-periods of the free, high- and low-pressure polyethylene radicals are quoted. For polyethylene, cross-linking is accepted as the predominant feature, and the ratio of cross-linkages to chain degradation is given as 3:1. 8) The composition of gases escaping from irradiated polyethylenes is surveyed. Latest results, arrived at by mass-spectrometer, give 85% H_2. 9) Changes in the concentration of double bonds after irradiation of polyethylene are tabulated, including: $>C=CH_2$, $-CH=CH_2$ and $-CH=CH-$. 10) Radiation effects on polyethylene in presence of oxygen are discussed. Hydrophilic properties can be imparted to surface areas of polyethylene foils, improving their dyeability. 11) Considerable space is devoted to reviewing changes of physical and mechanical properties of irradiated polyethylenes, including

Card 2/4

23063

Z/008/61/000/006/002/003
E112/E135

Modification of polyethylene by ionizing radiation

density, thermal expansion, crystallinity, transparency, solubility, melting point, etc. Changes of mechanical properties of irradiated polyethylenes can be generally characterised as transition from the plasto-elastic to the elastic state. Changes of the modulus of elasticity caused by irradiation in a reactor and determined at 20 °C are represented graphically. 12) Changes of electrical properties are reviewed. 13) Production and possible industrial applications are discussed. A photograph of bottles from polyethylene, the heat-resistance of which has oeen improved by radiation, is included. No direct contribution of Czechoslovak workers to irradiation techniques of polymers is reported in the present review.
There are 2 figures, 3 tables and 125 references: 17 Soviet-bloc and 108 non-Soviet-bloc. The four most recent English language references read as follows:
Ref.1: M.R. Jepson, Instr. and Automation, 31, 639 (1958).
Ref.89. R.M. Black, A. Charlesby. Intern. J. Appl. Radiation and Isotopes, 7, 126, 134 (1959).

Card 3/4

Z/008/61/000/006/002/003
E112/E135

Modification of polyethylene by ionizing radiation

Ref.96. H. Matsuo, M. Dole. J. Phys. Chem., 63, 837 (1959).
Ref.107. L. Marker, R. Early, S.L. Aggarwal. J. Polymer Sci., 38, 369 (1959).

ASSOCIATION: Výzkumný ústav gumárenské a plastikářské technologie, Gottwaldov
(Research Institute of Rubber and Plastics Technology, Gottwaldov)

Card 4/4

G/004/61/008/002/002/00
B007/B058

AUTHORS: Krejčík, M., Engineer, Možíšek, M., Graduate Chemist, Klimánek, L., and Zeman, J.

TITLE: Changes in mechanical properties of cord through the effect of ionizing radiation

PERIODICAL: Plaste und Kautschuk, v. 8, no. 2, 1961, 66 - 69

TEXT: Plastics and textiles suffer a change through radioactive radiation. Since automobile tires can now also be vulcanized by means of ionizing radiation, the authors studied resulting deteriorations of mechanical properties of tire cord (strength, elasticity). The following cord types were irradiated in air (from 2 - $2.5 \cdot 10^5$ rep/h) with various doses of γ-radiation (from ^{60}Co) in the range of from 10^4 to 10^8 rep: terylene cord (from Great Britain), dederon cord (Eastern Germany), caprone cord, silon cord, nylon cord (Switzerland), Rudnik viscose cord (Czechoslovakia), Cordenka super viscose cord (Netherlands), and cotton cord from Egyptian cotton. Diagrams show the measured results: the following losses

Card 1/3

Changes in mechanical ...

in strength occur at a dose of $3 \cdot 10^7$ rep; polyamide cords 70%, cotton cords 44%, viscose cords 30%, terylene 6%. Cotton- and viscose cords were almost entirely destroyed at doses above 10^8 rep, and a loss in strength of 60% occurred in terylene cord. The decrease in mechanical properties with an increase in the radiation dose proceeded for the individual tire cords as follows: cotton cord: continuous decrease; vicose cord: Rudnik: a similar course, the elasticity decrease amounts to 45% at $3 \cdot 10^7$ rep; Cordenka: after an initially low decrease, the strength- and elasticity drop increases, at $3 \cdot 10^7$ rep, the elasticity drop amounts to 47%; polyamide cords: silon, dederon, caprone, nylon; strength does not change in the range of small doses up to $4 \cdot 10^5$ rep; a steep drop takes place then, but from $2 \cdot 10^7$ rep, the drop becomes small again; terylene cord: strength hardly changes up to a dose of 10^7 rep, and then decreases slowly. A 50% decrease in strength occurs at the following doses: terylene $1.5 \cdot 10^8$ rep, Rudnik $4.7 \cdot 10^7$ rep, Cordenka $3.6 \cdot 10^7$ rep cotton $2.6 \cdot 10^7$ rep, dederon $1.4 \cdot 10^7$ rep, nylon $1.1 \cdot 10^7$ rep, silon

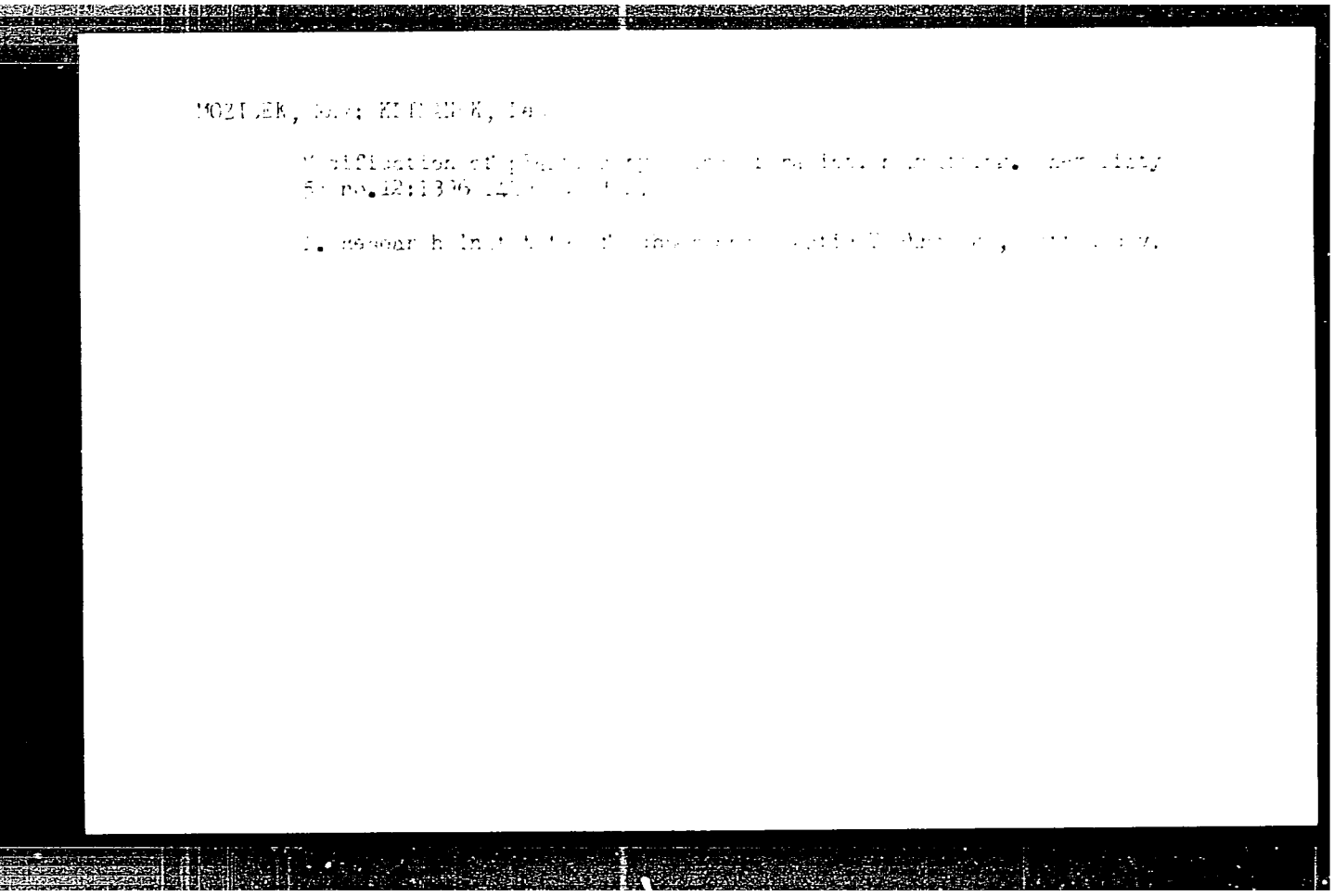
Card 2/3

Changes in mechanical ...

10^7 rep, caprone 10^7 rep. A yellow to brown coloring of samples sets in through irradiation. Cords impregnated with rubber solution gave almost the same results. With the aid of published data a report is given on the present state of study of radiation sensitivity of plastics and textiles and on vulcanization through radioactive radiation, requiring doses of from 1 to $5 \cdot 10^7$ rep. The Czechoslovakian original paper was translated into German by K. Weber, Zentrale Forschungsstelle der Reifenindustrie, Fürstenwalde (Central Research Center of the Tire Industry, Fürstenwalde). There are 8 figures and 23 references: 4 Soviet-bloc and 19 non-Soviet-bloc.

ASSOCIATION: Research Institute of Rubber and Plastics Technology, Gottwaldov, Czechoslovakia)

Card 3/3



Z/038/62/000/003/003/004
D291/D301

2/5210 (2209)
1/2210

AUTHOR: Možíšek, Max

TITLE: Plastic materials in nuclear engineering

PERIODICAL: Jaderná energie no. 3, 1962, 86-89

TEXT: The article, predominantly based on Western sources, generally discusses the resistance of plastic materials to ionizing radiation, and describes tests made to determine the radiation resistance and desorption properties of plastic materials available in the ČSSR. The test results are tabulated to facilitate the selection of plastic materials suitable for components and equipment used in nuclear engineering. To determine the effect of irradiation on mechanical properties, the following plastic materials were tested: High-pressure polyethylene (Alkathene), polypropylene (Moplen), macromolecular polyamide, polystyrene, polyethylene-terephthalate, polycarbonate (Makrolon), polytetrafluoroethylene, polytrifluorochloroethylene, polymethyl-methacrylate, and plasticized polyvinyl-

Card 1/4

Plastic materials in nuclear ..

chloride Specimens were irradiated with various gamma doses from a Co^{60} source with an intensity of 15 r/sec The highest relative radiation resistance was observed in polystyrene, polyethylene, polyethylene-terephthalate, polycarbonate, and plasticized polyvinyl chloride. Oxidation by radiation was observed on surfaces of polyethylene, polypropylene, and eventually polyamide specimens, e.g. polyethylene, irradiated for a period of 150 days, was covered by a 0.1 mm thick, brittle oxide coating The oxidized surfaces also absorb more readily water and radioisotopes Radioisotope sorption and decontamination ratios of plastic materials were evaluated by measuring residual activities after contamination of specimens in radioisotope solutions, and subsequent decontamination in a 10% HNO_3 solution Best decontamination and chemical-resistance results were observed in fluoroplasts; however, these materials also have the lowest radiation resistance. Relatively good results were also obtained from all other plastic materials with the exception of some plasticized and filled polyvinylchloride types The decontamination properties, especially or polyethylene and polypropylene, were con-

Card 2/4

Plastic materials in nuclear...

siderably impaired in irradiated specimens, a phenomenon, attributable to surface oxidation. Generally, it can be stated that plastic materials, containing aromatic nuclei in their macromolecules, are exceptionally stable against property changes by irradiation and against radiation oxidation. In conclusion, the author postulates that there is no plastic material which can be considered ideal from any point of view, but optimum properties as to radiation resistance and the decontamination degree after irradiation are exhibited by polyethyleneterephthalate, polycarbonate, and polystyrene. Radiation oxidation of polyethylene and polypropylene can be mitigated by an admixture of antioxidants. (Technical Editor. M Komůrka). There are 3 figures, 2 tables and 6 references: 1 Soviet-bloc and 5 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: Rubber Age 83 (1958), no. 3, p. 472; R.M. Richardson: Canad. Plastics (1958), no. 10, p. 38; H. Wells, I. Williamson: Chemical and Process Eng. 41 (1960), no. 5, pp. 191, 193; Rubb. J. and Intern. Plastics 136 (1959), no. 8, p. 289.

33944
Z/038/62/000/003/003/004
D291/D301

Plastic materials in nuclear...

ASSOCIATION: Výzkumný ústav gumárenské a plastikárské technologie, Gottwaldov I (Research Institute of Rubber and Plastics Technology, Gottwaldov I)

Card 4/4

MOZISEK, Max

Control of cord impregnation by means of radioisotopes. Jaderna energie 8 no.7:242-244 Jl '62.

1. Vyzkumny ustav gumarenske a plastikarske technologie, Gottwaldov.

Z/038/63/000/003/002/004
D406/D301

AUTHOR: Možíšek, Max

TITLE: Plastic materials in ionizing-radiation dosimetry

PERIODICAL: Jaderná energie, no. 3, 1963, 81-85

TEXT: Polymerization dosimeters have various sensitivities and measuring ranges, according to the monomers and solvents used. To study the possible use of transparent plastic materials in dosimetry, i.e. spectrophotometric measuring of color changes caused by stabilized free radicals or conjugated double bonds, irradiation tests were performed with polystyrene, polycarbonate, polymethylene-terephthalate, and polymethyl-methacrylate. All specimens showed a certain radiation decolorization (which can be stabilized), and have a maximum absorption in the blue region of the spectrum. For dosimetry in the range of 10^7 to $5 \cdot 10^8$ rad, polycarbonates were found most suitable, since their extinction is directly proportional to the applied dose. Polystyrene is not very sensitive, polymethyl-methacrylate has a very narrow range, and polyethylene-terephthalate

Card 1/2

Plastic materials ...

is not suitable due to its high initial absorption. Very good results were also obtained with Czechoslovak polyvinylchloride foils which have an absorption maximum in the blue and red region of the spectrum. A combination of polycarbonate and polyvinylchloride permits measurement of doses in the range of 10^6 to $5 \cdot 10^8$ rad. Plastic-material dosimeters are suitable for rapid measuring of high ionising-radiation doses and evaluating various dose rates. There are 8 figures. (Technical editor: Z. Spurný).

ASSOCIATION: Výzkumný ústav gumárenské a plastikářské technologie, Gottwaldov I (Research Institute for Rubber and Plastic-Material Technology, Gottwaldov I)

MOZISEK, Max

Modification of polytetrafluorethylene by radiation grafting. Jaderna energie 9 no. 9:293 S'63.

1. Vyzkumny ustav gumarenske a plastkarske technologie, Gottwaldov.

MOZISEK, Max

Device for the measurement of impregnation coating on cords on the basis of beta radiation absorption. Jaderna energie 9 no.10:327 O '63.

1. Vyzkumny usta gumarenske a plastikarske technologie, Gottwaldov.

L 19152-63 EWP(j)/EPF(c)/BDS AFFTC/ASD Pc-4/Pr-4 RM/WW/MAY
ACCESSION NR: AP3002592 G/0004/63/010/006/0324/0330

67
66

AUTHOR: Rybnikar, F., Mozisek, M., Jelinek, O.

TITLE: Effects of radiation on the structure and properties of isotactic polypropylene

SOURCE: Plaste und Kautschuk, v. 10, no. 6, 324-330 - 1963

TOPIC TAGS: isotactic polypropylene, radiation effect, plastics crystallinity, polypropylene structure, polypropylene property polymer

ABSTRACT: Isotactic polypropylene was irradiated in vacuo and in air, at a temperature of 20° ± 5° C, with gamma rays emanating from a Co-60 source at a dosage intensity of 14 rad/sec. The absorbed dose was measured with a Fe(II) sulfate dosimeter. The irradiated samples were heat-treated at 90° C for 48 hr. and examined by X-ray spectrography (Cuk-alpha), for melting point, solubility and swelling in xylene, density, mechanical properties, spherolite growth rate, and isothermal crystallization. Irradiation in air caused an oxidative decomposition, characterized principally by a decrease in cross-linking yield, resulting in a significant deterioration in mechanical properties. Irradiation

Card 1/02

L 19152-63

ACCESSION NR: AP3002592

in vacuo, at a dose below 3×10^7 rad, caused a splitting of the macromolecules to split off. At higher doses, progressive increase in cross-linking of the macromolecules and the formation of an insoluble component became evident. The melting point decreased after irradiation in vacuo; crystallization rate first decreased and, at doses over 1.2×10^7 rad, increased. The increase was attributed to an increase in the number of preferred crystallization nuclei, The rate of spherolite growth was not affected by irradiation. Crystallization isotherms are shown in Figure 1 of Enclosure 1; relations between crystallization and radiation dose are shown in Figure 2 of Enclosure 2; some significant physical constants are shown in Table 1, Enclosure 3. This paper was translated by J. Techel, Radebeul. Orig. art. has: 13 diagrams and 4 tables.

ASSOCIATION: Research Institute for Rubber and Plastics Technology, Gottwaldow, Czechoslovakia

SUBMITTED: 080ct62	DATE ACQ: 16Jul63	ENCL: 03
SUB CODE: MA, CH	NO REF SOV: 000	OTHER: 010

Card 2/2

MOZISEK, Max; KLIMANEK, Leo

Modification of polyvinyl chloride by triallylcyanurate seeding.
Jaderna energie 10 no.12:444-445 D '64.

1. Research Institute of Rubber and Plastic Technology, Gottwaldov.

POLAND/General Problems of Pathology - Comparative Oncology. U-3
Tumors of Man.

Abs Jour : Ref Zhur - Biol., No 16, 1958, 75543

Author : Konczynski, L., Mozler-Danielczuk, A., Tulczynski, M.
Inst :
Title : Primary Reticulosarcoma of the Heart.

Orig Pub : Patol. polska, 1957, 8, No 4, 371-376

Abstract : Description of a case of primary reticulosarcoma of the posterior wall of right atrium in a male 55 years old, and discussion of 5 similar cases described in the literature.

Card 1/1

MIKHAYLOV, V.G., doktor tekhn.nauk; KRAPIVIN, M.G., kand.tekhn.nauk; KARYUK, G.G., kand.tekhn.nauk; KOZHENTSEV, Yu.T., aspirant; GARASHCHENKO, P.A., aspirant; MALYAROV, G.P., aspirant; KOGAN, K.B., inzh.; SUKACH, V.D., inzh.; TKACHENKO, V.A., inzh.; LINENKO, Yu.P., inzh.; MOZNAIM, G.I., inzh.; MARTYNENKO, I.A., inzh.

Cutting tool for the cutter loader. Ugol' Ukr. 6 no.8:37-39 Ag '62. (MIRA 15:11)
(Coal mining machinery)

MOZHAM, G.I.

Equipment for hydraulic mining. Ugol' Ukr. 5 no.2:25-26 F '61.
(MIRA 14:3)

1. Glavnyy inzh. spetsial'nogo konstruktorskogo byuro Yasinovatskogo zavoda gornoprokhodcheskogo oborudovaniya.
(Yasinovataya—Hydraulic mining—Equipment and supplies)

DERKACH, K.F., inzh.; MOZNAIM, G.I., inzh., ROZENBERG, V.B., inzh.

Mining and ore-dressing equipment made by the Yasinovatka Machinery Plant. Gor. zhur. no.3:63-66 Mr '62. (MIR. 15:7)

1. Yasinovatskiy mashinostroitel'nyy zavod.
(Yasinovatka—Mining machinery)
(Yasinovatka—Ore dressing—Equipment and supplies)